PROBABILITY OF RAIN IN SUMMER AT ATLANTA, GA.

By W. W. REED, Assist. Observer.

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In a paper on the probability of rain in summer, Bruno Rolf [1] has advanced a method of forecasting from local conditions, whose application to the conditions observed at Stockholm meets with success in 68 per cent of the predictions.

Observed pressure is taken as the chief argument and by combination with other elements such as relative humidity, cloudiness, and wind direction he has derived curves of probability of rain, which he designates barombrometric curves or barombrograms.

The method of derivation in his work is largely mathematical and can not be entered into here, but it may be interesting to give some tables somewhat similar to his showing the probability of rain at Atlanta, using as arguments wind direction, pressure, pressure change, and relative humidity.

In this investigation the wind direction is taken as the chief argument, since it is believed to be one of the most important at any season and because of the slight variations in pressure in summer probably the most important factor in this region. For the first test the east wind was chosen. The a. m. observation is made the basis of the forecast, and the 12-hour period beginning at 7 p. m. is taken as the period for verification.

Probability of rain in summer at Atlanta, Ga., based on records from June to August, 1890–1919.

EAST WIND.

Wind observed from the east (7 a. m.)	times..	415
Rainfall 0.01 inch or more, 7 p. m. to 7 a. m.	times..	90
Probability of rain		0.22

TABLE 1.—*Pressure.*

Observed pressure.	Number of times.	Probability of rain.
Below 30.01	63	0.24
30.01–30.10	160	.22
30.11–30.20	145	.21
Above 30.20	47	.19

TABLE 2.—*Relative humidity.*

Percentage.	Number of times.	Probability of rain.
Below 71	71	0.10
71–80	89	.18
81–90	123	.20
91–100	132	.33

TABLE 3.—*Pressure change.*

Change.	Number of times.	Probability of rain.
Rise 0.10 or more	62	0.16
Rise 0.08 or 0.09	38	.13
Rise 0.06 or 0.07	39	.20
Stationary	234	.23
Fall 0.06 or 0.07	19	.26
Fall 0.08 or 0.09	12	.25
Fall 0.10 or more	11	.54

[1] Probabilité et prognostics des pluies d'été, Upsala, 1917, vii, 25, [2] p., charts, tables. A translation has been prepared and placed in the Weather Bureau Library.

TABLE 4.—*Pressure change—Relative humidity—Probability of rain 7 p. m. to 7 a. m.*

Relative humidity.	Pressure rise 0.06 or more.	Pressure stationary.	Pressure fall 0.06 or more.
Below 71	[1] 0.03_{29}	0.09_{23}	0.30_{10}
71–80	$.07_{28}$	$.20_{49}$	$.33_{12}$
81–90	$.15_{40}$	$.20_{73}$	$.36_{11}$
91–100	$.33_{42}$	$.32_{81}$	$.33_{9}$

Subscripts indicate number of times observed.

TABLE 5.—*Observed pressure—Relative humidity—Probability of rain 7 p. m. to 7 a. m.*

Relative humidity.	Pressure.			
	Below 30.00.	30.01–30.10.	30.11–30.20.	Above 30.20.
Below 71	0.00_{6}	0.10_{31}	0.18_{22}	0.00_{13}
71–80	$.29_{17}$	$.25_{28}$	$.13_{31}$	$.00_{13}$
81–90	$.14_{22}$	$.22_{54}$	$.15_{41}$	$(.50)^{2}$
91–100	$.39_{18}$	$.28_{47}$	$.33_{51}$	$.38_{16}$

TABLE 6.—*Observed pressure—Pressure change—Probability of rain 7 p. m. to 7 a. m.*

Pressure change.	Pressure.			
	Below 30.00.	30.01–30.10.	30.11–30.20.	Above 30.20.
Rise 0.06 or more	0.17_{13}	0.14_{43}	0.12_{56}	0.25_{28}
Stationary	$.17_{36}$	$.27_{188}$	$.23_{77}$	$.11_{18}$
Fall 0.06 or more	$.47_{13}$	$.13_{15}$	$.46_{11}$	$.00_{1}$

Table 1 shows that with east wind the observed pressure gives a slight indication of the probability of rain, but considering the general probability of 0.22 it may be neglected.

Relative humidity is a far better index, and taken in connection with observed pressure seems to be an excellent one with high humidity and low pressure.

From Table 3 it is evident that pressure change is by far of the greatest significance. A comparison of Tables 2 and 4 shows the lowering effect of pressure rise with low humidity and the uniform effect of pressure fall regardless of relative humidity.

Since these tables refer only to east winds at this station it is not permissible to draw general conclusions as to the probability of rain using pressure as the chief argument, but with the winds under consideration it is plain that the observed pressure is by no means a useful index as to rain in summer.

KALTENBRUNNER'S STATISTICAL METHOD OF FORECASTING.

By ALBERT PEPPLER.

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A statistical method of weather forecasting, based upon the sequence of weather for a large number of years, was published in 1914 by Kaltenbrunner. The idea underlying his work was that the weather of to-day is a